

CLAIMS

1. (currently amended) A method for reducing spurious emissions in an amplified signal, comprising the steps of:

(a) receiving an input signal; and

(b) applying frequency-dependent phase pre-distortion to the input signal to generate a pre-distorted output signal, wherein the frequency-dependent phase pre-distortion is based on at least one corresponding phase difference between at least one pair of critical frequencies, such that, when the pre-distorted output signal is applied to an amplifier to generate the amplified signal, the frequency-dependent phase pre-distortion reduces spurious emissions in the amplified signal, wherein step (b) comprises the steps of:

(1) generating a main output signal from the input signal;

(2) generating one or more frequency-dependent phase pre-distortion signals from the input signal; and

(3) advancing or delaying each frequency-dependent phase pre-distortion signal relative to the main output signal; and

(4) combining each advanced or delayed frequency-dependent phase pre-distortion signal with the main output signal to generate the pre-distorted output signal.

2. (canceled)

3. (currently amended) The invention of claim [[2]] 1, wherein step (b)(1) comprises the step of applying frequency-independent magnitude and phase pre-distortion to the input signal to generate the main output signal.

4. (currently amended) The invention of claim [[2]] 1, wherein each frequency-dependent phase pre-distortion signal is based on a corresponding phase difference between a pair of critical frequencies.

5. (original) The invention of claim 4, wherein step (b)(3) comprises the step of advancing or delaying each frequency-dependent phase pre-distortion signal relative to the main output signal based on the frequency difference between the corresponding pair of critical frequencies.

5 6. (original) The invention of claim 4³, wherein step (b)(2) comprises the step of generating two or more different frequency-dependent phase pre-distortion signals from the input signal based on two or more different pairs of critical frequencies.

6 7. (original) The invention of claim 1, wherein the input signal is a baseband signal and the frequency-dependent phase pre-distortion is applied in the baseband domain.

7 8. (original) The invention of claim 1, wherein the input signal is an RF signal and the frequency-dependent phase pre-distortion is applied in the RF domain.

8 9. (original) The invention of claim 1, wherein the frequency-dependent phase pre-distortion is based on data retrieved from one or more look-up tables.

9 10. (original) The invention of claim 9³, wherein the one or more look-up tables are adaptively updated according to control signals generated based on the amplified signal.

10 11. (original) The invention of claim 1, wherein:
step (b) comprises the steps of:

(1) applying frequency-independent magnitude and phase pre-distortion to the input signal to generate a main output signal;

(2) generating one or more frequency-dependent phase pre-distortion signals from the input signal, wherein each frequency-dependent phase pre-distortion signal is advanced or delayed relative to the main output signal based on the frequency difference between the corresponding pair of critical frequencies; and

(3) advancing or delaying each frequency-dependent phase pre-distortion signal relative to the main output signal; and

(4) combining each advanced or delayed frequency-dependent phase pre-distortion signal with the main output signal to generate the pre-distorted output signal;

each frequency-dependent phase pre-distortion signal is based on a corresponding phase difference between a pair of critical frequencies;

the frequency-dependent phase pre-distortion is based on data retrieved from one or more look-up tables, wherein the one or more look-up tables are adaptively updated according to control signals generated based on the amplified signal

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1 11 12. (original) The invention of claim 11, wherein step (b)(2) comprises the step of
2 generating two or more different frequency-dependent phase pre-distortion signals from the input signal
3 based on two or more different pairs of critical frequencies.

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1 12 13. (original) The invention of claim 11, wherein the input signal is a baseband signal and
2 the frequency-dependent phase pre-distortion is applied in the baseband domain.

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1 13 14. (original) The invention of claim 11, wherein the input signal is an RF signal and the
2 frequency-dependent phase pre-distortion is applied in the RF domain.

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1 14 15. (currently amended) An apparatus for reducing spurious emissions in an amplified
2 signal, wherein the apparatus is configured to:
3 (a) receive an input signal; and
4 (b) apply frequency-dependent phase pre-distortion to the input signal to generate a pre-
5 distorted output signal, wherein the frequency-dependent phase pre-distortion is based on at least one
6 corresponding phase difference between at least one pair of critical frequencies, such that, when the pre-
7 distorted output signal is applied to an amplifier to generate the amplified signal, the frequency-
8 dependent phase pre-distortion reduces spurious emissions in the amplified signal, wherein the apparatus
9 comprises:

10 a main signal processing path configured to generate a main output signal from the input
11 signal;

12 one or more frequency-dependent phase pre-distortion paths configured to generate one
13 or more frequency-dependent phase pre-distortion signals from the input signal;

14 one or more delay blocks configured to advance or delay each frequency-dependent
15 phase pre-distortion signal relative to the main output signal; and

16 a combiner configured to combine each advanced or delayed frequency-dependent phase
17 pre-distortion signal with the main output signal to generate the pre-distorted output signal.

1 16. (canceled)

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1 15 17. (currently amended) The invention of claim [[16]] 15, wherein the main signal
2 processing path is configured to apply frequency-independent magnitude and phase pre-distortion to the
3 input signal to generate the main output signal.

1 ¹⁶ 18. (currently amended) The invention of claim ¹⁴ [[16]], ¹⁴ 15, wherein each frequency-
2 dependent phase pre-distortion signal is based on a corresponding phase difference between a pair of
3 critical frequencies.

1 ¹⁷ 19. (original) The invention of claim ¹⁶ 18, wherein the one or more delay blocks advance or
2 delay each frequency-dependent phase pre-distortion signal relative to the main output signal based on
3 the frequency difference between the corresponding pair of critical frequencies.

1 ¹⁸ 20. (original) The invention of claim ¹⁶ 18, comprising two or more frequency-dependent
2 phase pre-distortion paths configured to generate two or more different frequency-dependent phase pre-
3 distortion signals from the input signal based on two or more different pairs of critical frequencies.

1 ¹⁴ 21. (original) The invention of claim ¹⁴ 15, wherein the input signal is a baseband signal and
2 the apparatus applies the frequency-dependent phase pre-distortion in the baseband domain.

1 ²⁰ 22. (original) The invention of claim ¹⁴ 15, wherein the input signal is an RF signal and the
2 apparatus applies the frequency-dependent phase pre-distortion in the RF domain.

1 ²¹ 23. (original) The invention of claim ¹⁴ 15, wherein the apparatus retrieves data for the
2 frequency-dependent phase pre-distortion from one or more look-up tables.

1 ²² 24. (original) The invention of claim ²¹ 23, wherein the apparatus adaptively updates the one
2 or more look-up tables according to control signals generated based on the amplified signal.

3 ²³ 25. (previously presented) A machine-readable medium, having encoded thereon program
4 code, wherein, when the program code is executed by a machine, the machine implements a method for
5 reducing spurious emissions in an amplified signal, comprising the steps of:

- 6 (a) receiving an input signal; and
7 (b) applying frequency-dependent phase pre-distortion to the input signal to generate a pre-
8 distorted output signal, wherein the frequency-dependent phase pre-distortion is based on at least one
9 corresponding phase difference between at least one pair of critical frequencies, such that, when the pre-
10 distorted output signal is applied to an amplifier to generate the amplified signal, the frequency-
11 dependent phase pre-distortion reduces spurious emissions in the amplified signal.

1 24 26. (previously presented) A method for reducing spurious emissions in an amplified signal,
2 comprising the steps of:

- 3 (a) receiving an input signal; and
4 (b) applying frequency-dependent phase pre-distortion to the input signal to generate a pre-
5 distorted output signal, such that, when the pre-distorted output signal is applied to an amplifier to
6 generate the amplified signal, the frequency-dependent phase pre-distortion reduces spurious emissions
7 in the amplified signal, wherein step (b) comprises the steps of:
8 (1) applying frequency-independent magnitude and phase pre-distortion to the input
9 signal to generate a main output signal;
10 (2) generating one or more frequency-dependent phase pre-distortion signals from
11 the input signal; and
12 (3) advancing or delaying each frequency-dependent phase pre-distortion signal
13 relative to the main output signal; and
14 (4) combining each advanced or delayed frequency-dependent phase pre-distortion
15 signal with the main output signal to generate the pre-distorted output signal.

1 26 27. (previously presented) An apparatus for reducing spurious emissions in an amplified
2 signal, wherein the apparatus comprises:

- 3 (a) a main signal processing path configured to apply frequency-independent magnitude and
4 phase pre-distortion to the input signal to generate a main output signal;
5 (b) one or more frequency-dependent phase pre-distortion paths configured to generate one
6 or more frequency-dependent phase pre-distortion signals from the input signal;
7 (c) one or more delay blocks configured to advance or delay each frequency-dependent
8 phase pre-distortion signal relative to the main output signal; and
9 (d) a combiner configured to combine each advanced or delayed frequency-dependent phase
10 pre-distortion signal with the main output signal to generate a pre-distorted output signal, such that, when
11 the pre-distorted output signal is applied to an amplifier to generate the amplified signal, the frequency-
12 dependent phase pre-distortion reduces spurious emissions in the amplified signal.

1 25 28. (previously presented) The invention of claim 24, wherein step (b)(2) comprises
2 generating two or more frequency-dependent phase pre-distortion signals from the input signal.

1 27 29. (previously presented) The invention of claim 26, wherein the apparatus comprises:

2 two or more frequency-dependent phase pre-distortion paths configured to generate two or more
3 frequency-dependent phase pre-distortion signals from the input signal; and

4 two or more delay blocks configured to advance or delay each frequency-dependent phase pre-
5 distortion signal relative to the main output signal.

1 28 30. (new) A method for reducing spurious emissions in an amplified signal, comprising the
2 steps of:

3 (a) receiving an input signal; and

4 (b) applying frequency-dependent phase pre-distortion to the input signal to generate a pre-
5 distorted output signal, wherein:

6 the frequency-dependent phase pre-distortion is based on at least one corresponding
7 phase difference between at least one pair of critical frequencies, such that, when the pre-distorted output
8 signal is applied to an amplifier to generate the amplified signal, the frequency-dependent phase pre-
9 distortion reduces spurious emissions in the amplified signal; and

10 the frequency-dependent phase pre-distortion is based on data retrieved from one or more
11 look-up tables.

1 29 31. (new) The invention of claim 30; wherein the one or more look-up tables are adaptively
2 updated according to control signals generated based on the amplified signal.

1 30 32. (new) An apparatus for reducing spurious emissions in an amplified signal, wherein the
2 apparatus is configured to:

3 (a) receive an input signal; and

4 (b) apply frequency-dependent phase pre-distortion to the input signal to generate a pre-
5 distorted output signal, wherein:

6 the frequency-dependent phase pre-distortion is based on at least one corresponding
7 phase difference between at least one pair of critical frequencies, such that, when the pre-distorted output
8 signal is applied to an amplifier to generate the amplified signal, the frequency-dependent phase pre-
9 distortion reduces spurious emissions in the amplified signal; and

10 the apparatus retrieves data for the frequency-dependent phase pre-distortion from one or
11 more look-up tables.

1 31 33. (new) The invention of claim 32; wherein the apparatus adaptively updates the one or
2 more look-up tables according to control signals generated based on the amplified signal.